Supplemental Online Content

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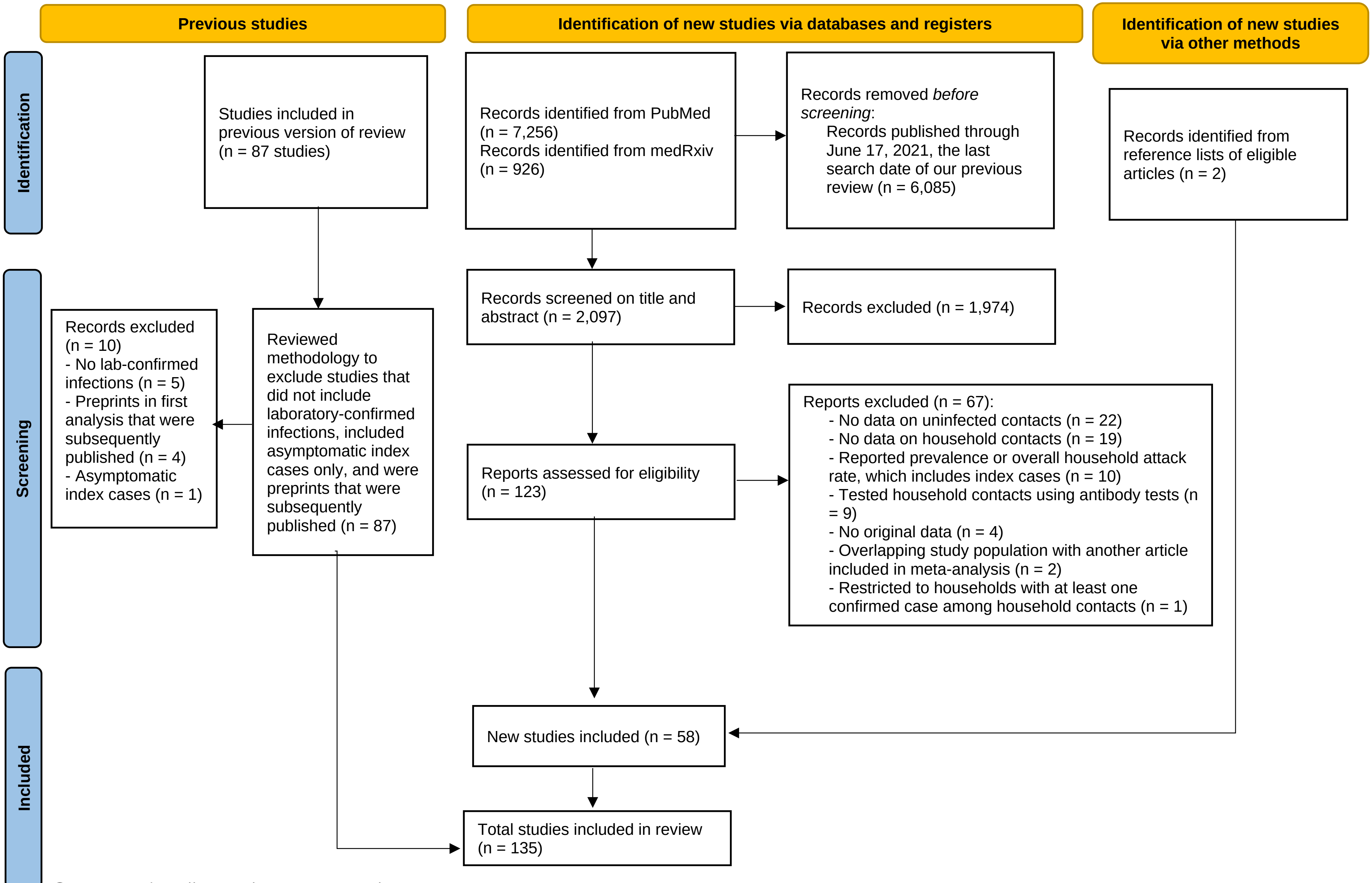
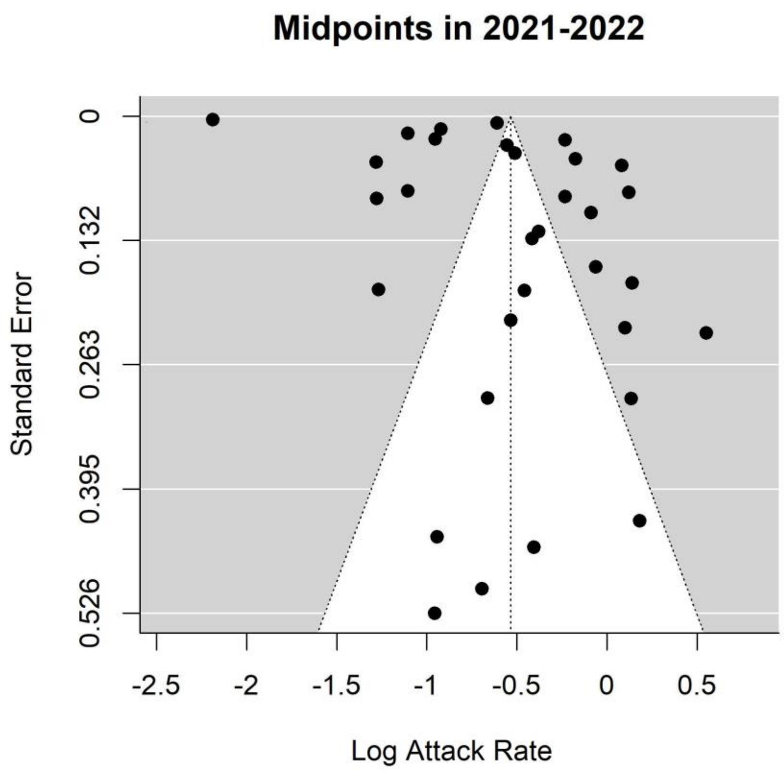
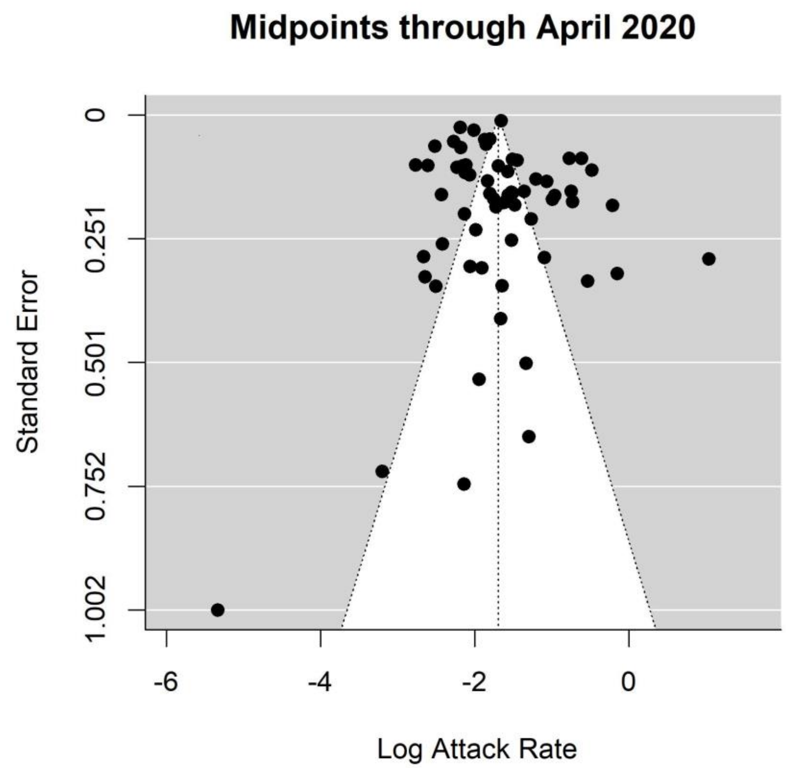
This supplemental material has been provided by the authors to give readers additional information about their work.

eFigure 1. PRISMA Flow Diagram



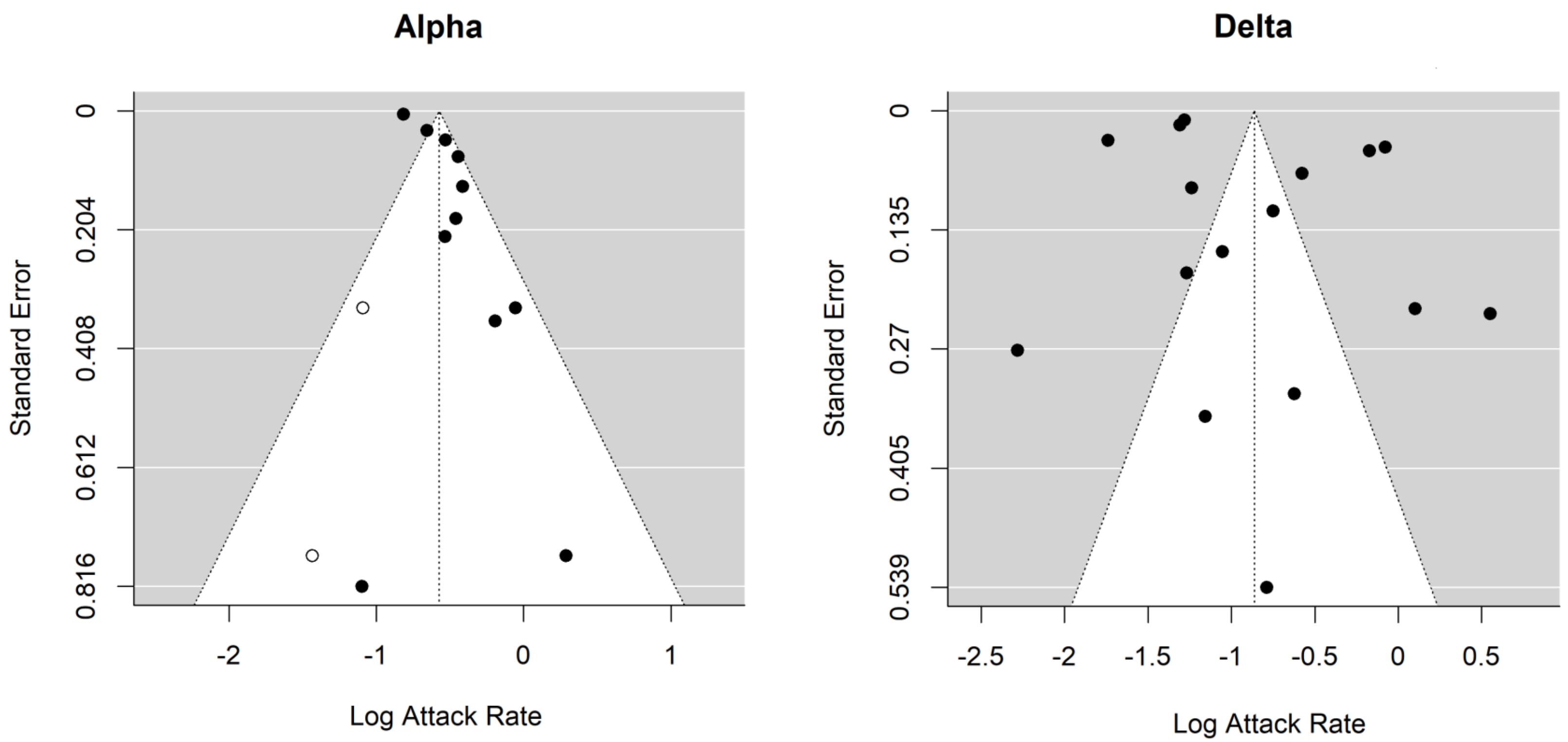
eFigure 2. Funnel Plots of Studies Reporting Household Secondary Attack Rates With Midpoints in 2021 and Through April 2020





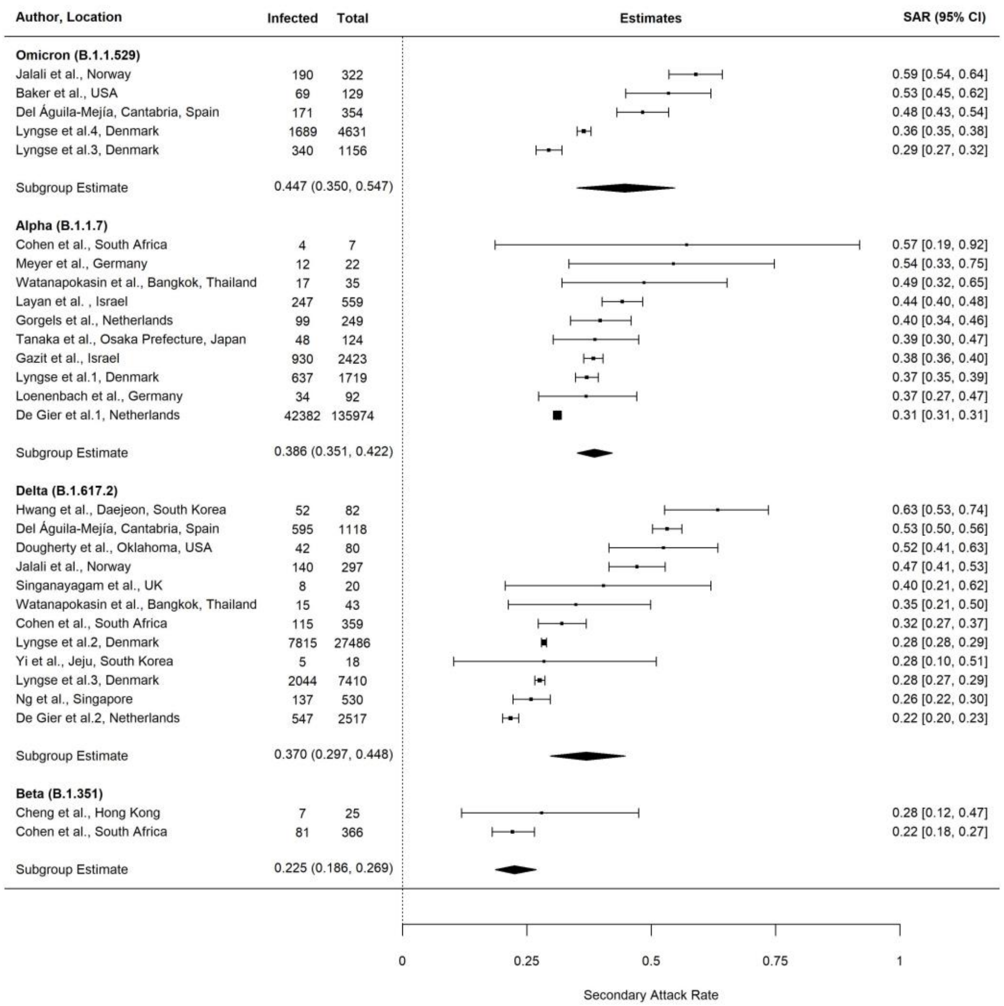
Begg & Mazumdar rank correlation test: studies with midpoints in 2021-2022 ($P<0.001$); midpoints through April 2020 ($P=0.508$). Excluding one study in 2021[1] that had a relatively low SAR of 10.1% improved the funnel plot symmetry and resulted in a SAR of 38.6% (95%CI, 34.5%-42.8%) for studies with midpoints in 2021-2022.

eFigure 3. Funnel Plots of Studies Reporting Household Secondary Attack Rates for Alpha (B.1.1.7) and Delta (B.1.617.2) Variants



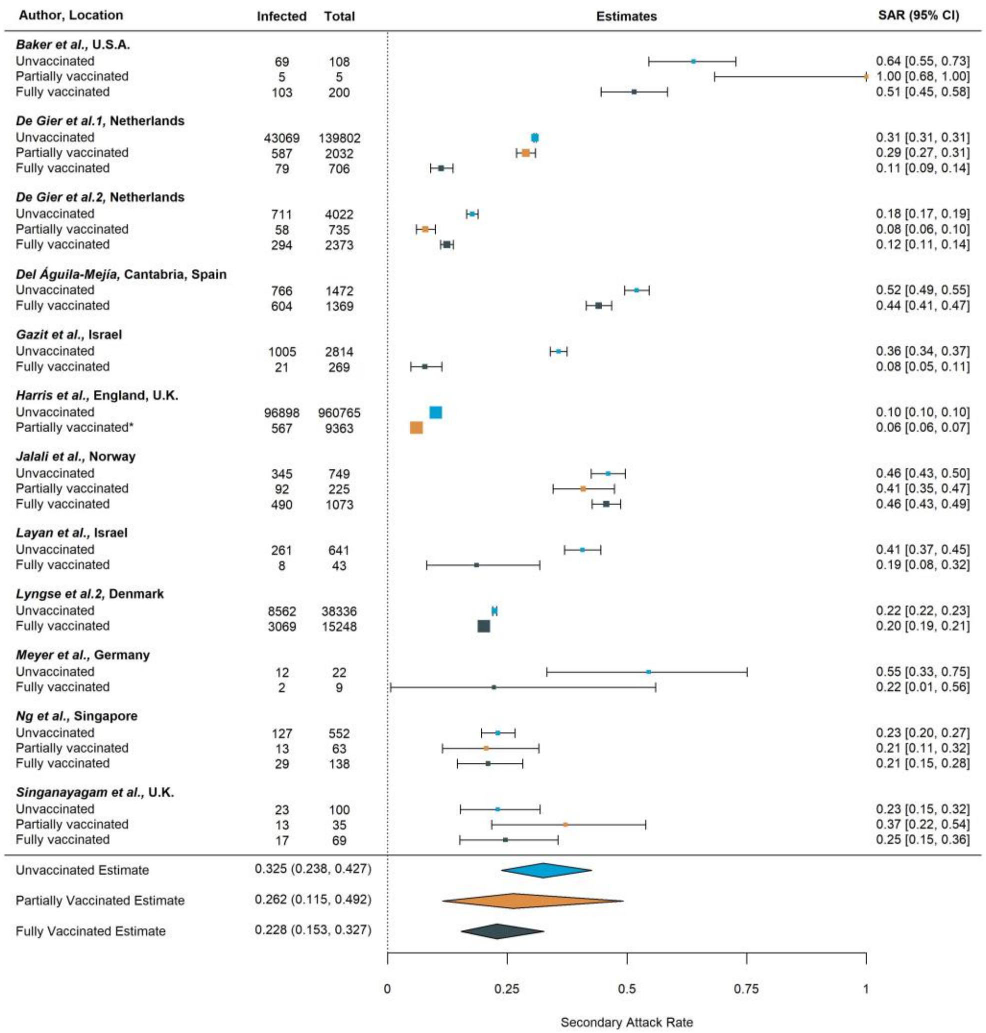
Begg & Mazumdar rank correlation test: Alpha (pre-imputation) (*P*=0.087); Delta (*P*=0.894)

eFigure 4. Household Secondary Attack Rates for Omicron (B.1.1.529), Alpha (B.1.1.7), Delta (B.1.617.2), and Beta (B.1.351) Variants From Unvaccinated Index Cases to Unvaccinated Household Contacts



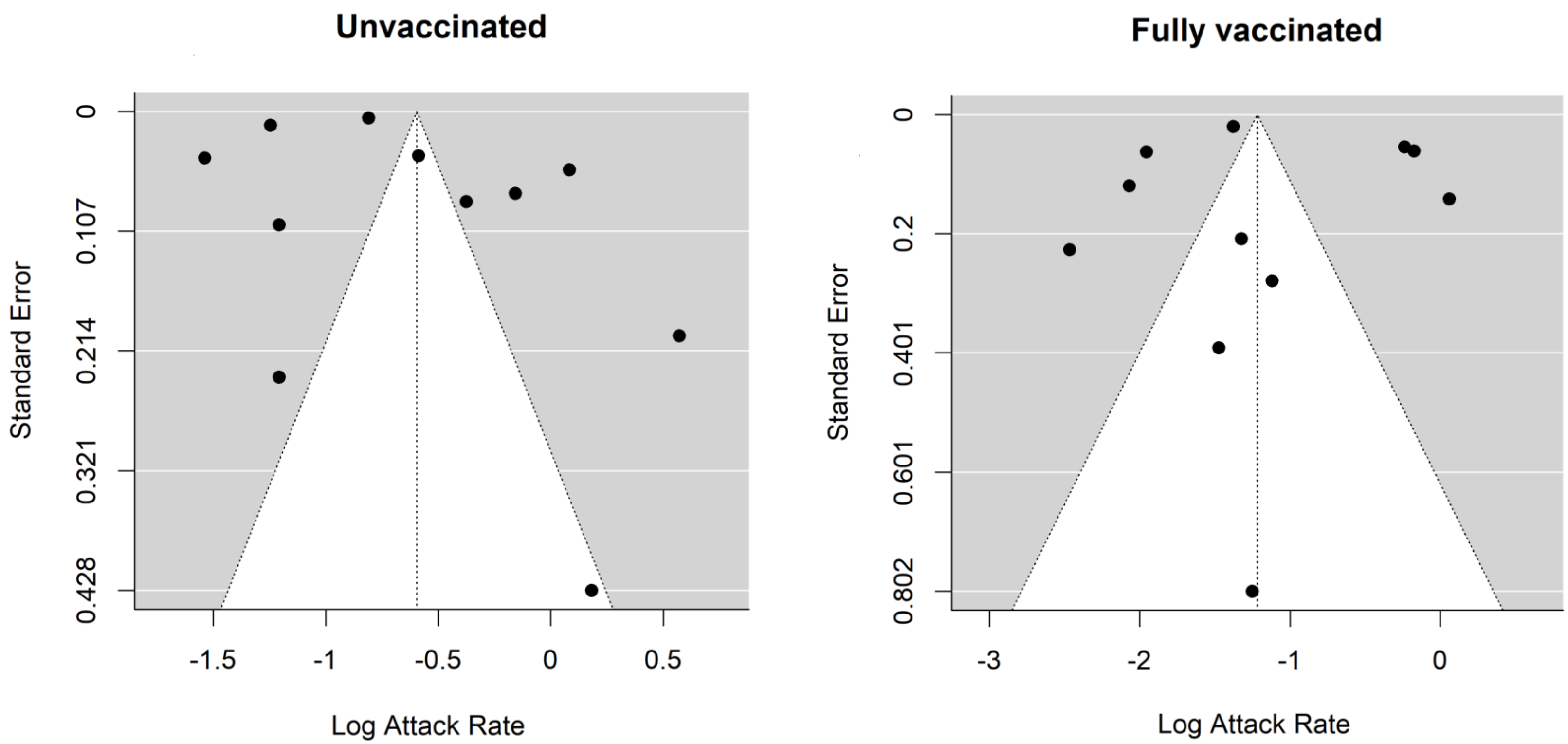
Three studies included did not disaggregate household secondary attack rates by vaccination status. Watanapokasin *et al*. reported that 83% of index cases were unvaccinated. Vaccination status was not provided for contacts. Dougherty *et al.* reported that only 17 of 194 (8.8%) exposed individuals in the study were fully vaccinated. Cohen *et al.* reported that vaccine uptake was low in study sites reaching 5% fully vaccinated by the end of follow up. Point sizes are an inverse function of the precision of the estimates, and bars correspond to 95%CIs. Diamonds represent summary SAR estimates with corresponding 95%CIs.

eFigure 5. Household Secondary Attack Rates by Index Case Vaccination Status With All Contacts Are Included Regardless of Vaccination Status



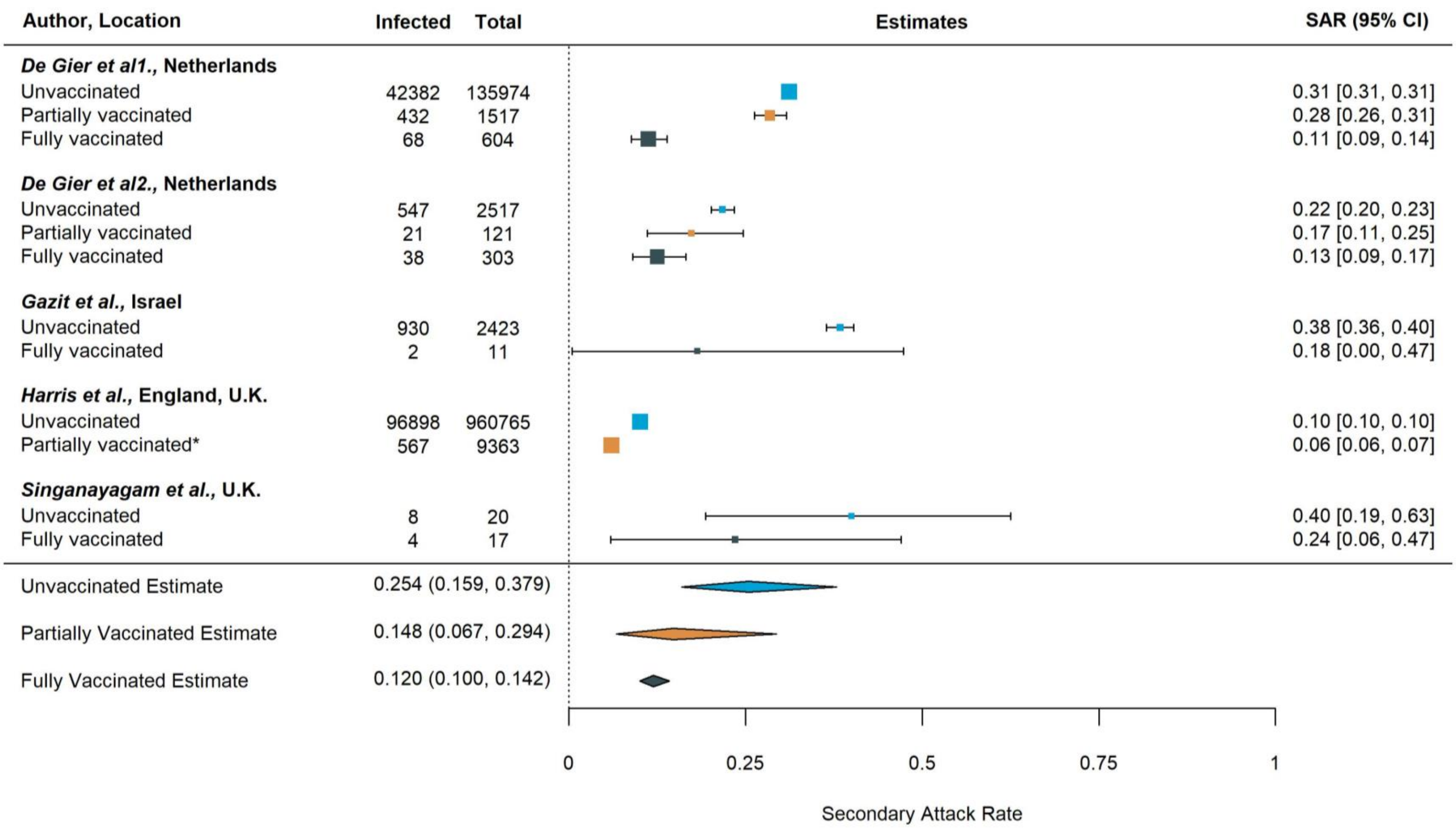
Point sizes are an inverse function of the precision of the estimates, and bars correspond to 95%CIs. Diamonds represent summary SAR estimates with corresponding 95%CIs.

eFigure 6. Funnel Plots of Studies Reporting Household Secondary Attack Rates From Unvaccinated or Fully Vaccinated Index Cases to All Contacts Regardless of Vaccination Status



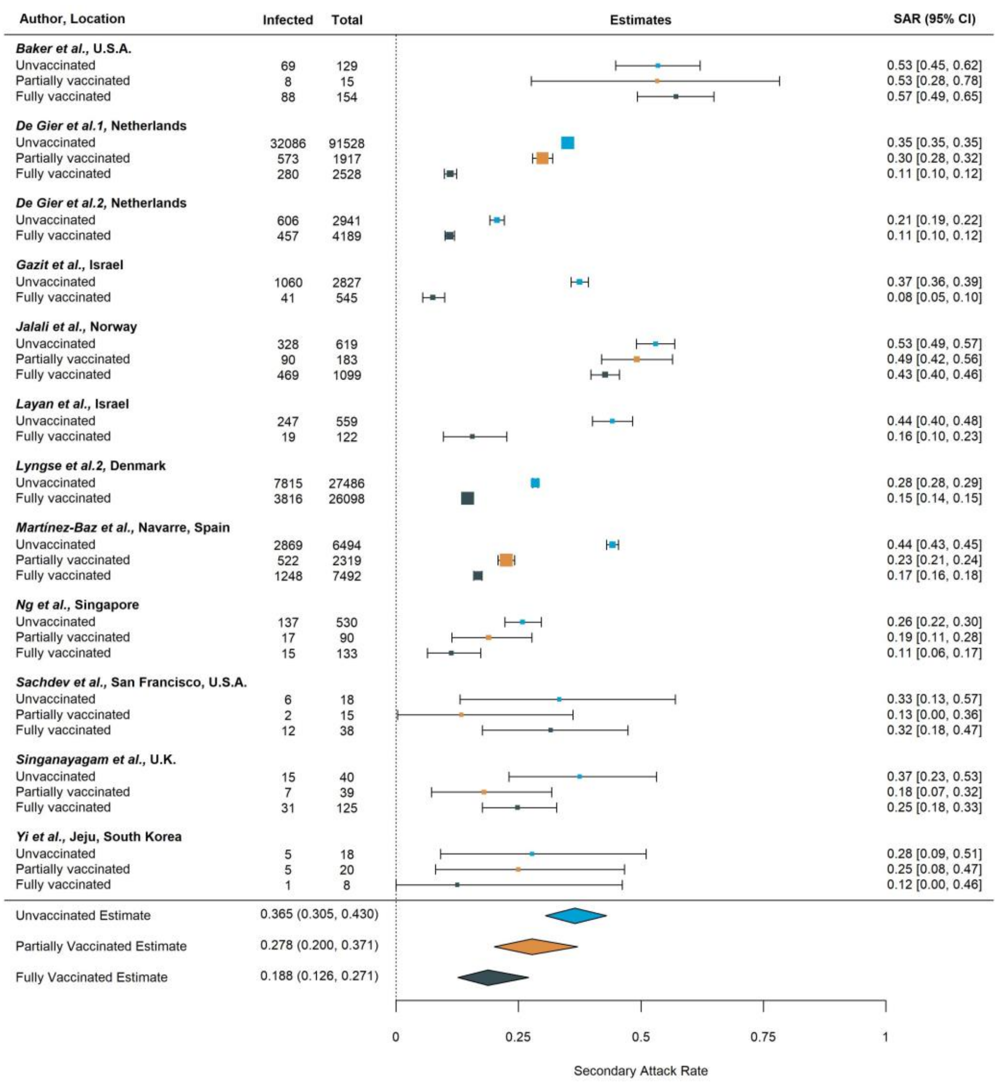
Begg & Mazumdar rank correlation test: unvaccinated (*P*=0.542); fully vaccinated (*P*=0.879)

eFigure 7. Household Secondary Attack Rates by Index Case Vaccination Status With Only Unvaccinated Contacts Included



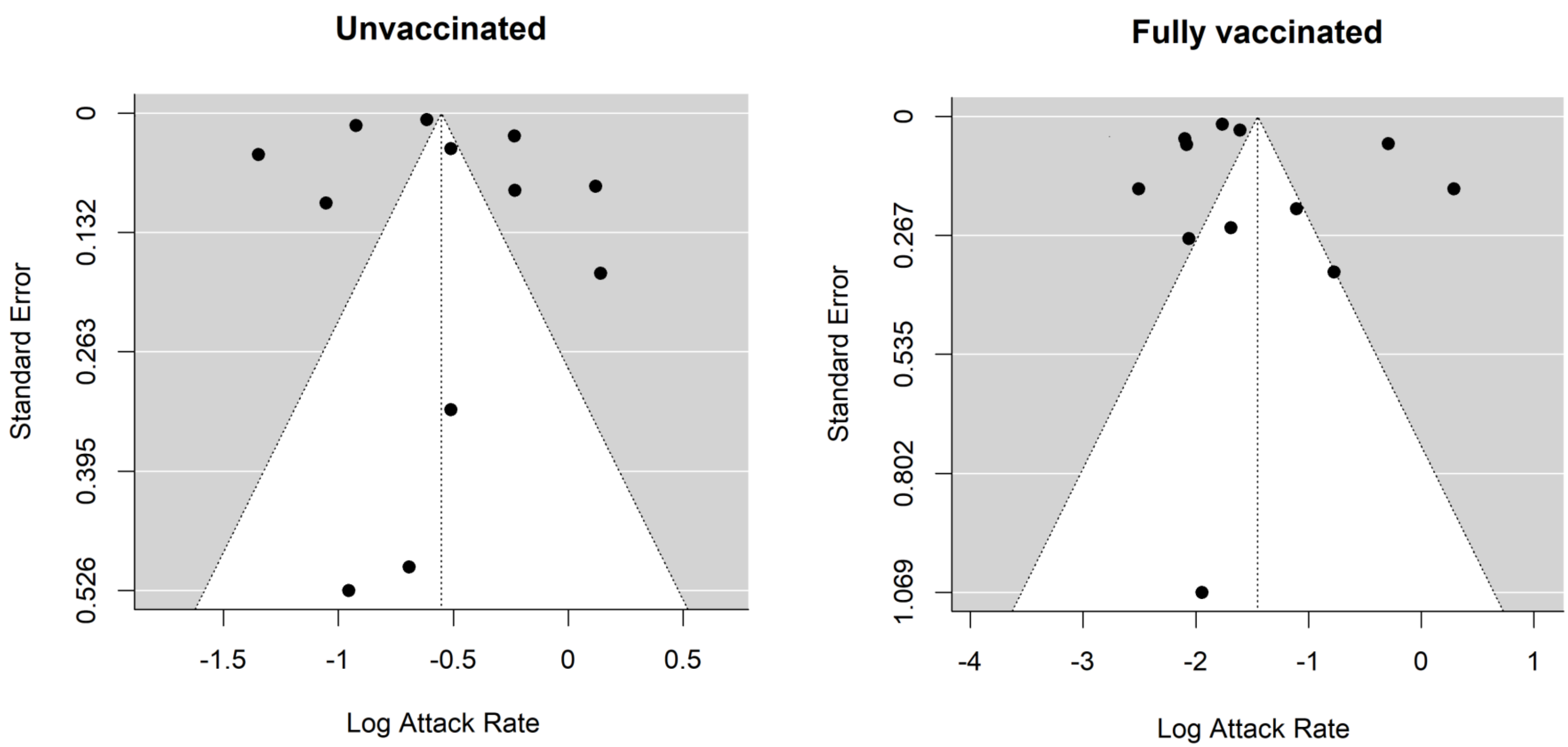
*For *Harris et al.*, most of the vaccinated index cases (93%) had received only the first dose of vaccine and secondary attack rates were not disaggregated by dose. Point sizes are an inverse function of the precision of the estimates, and bars correspond to 95%CIs. Diamonds represent summary SAR estimates with corresponding 95%CIs.

eFigure 8. Household Secondary Attack Rates by Contact Vaccination Status With All Index Cases Included Regardless of Vaccination Status



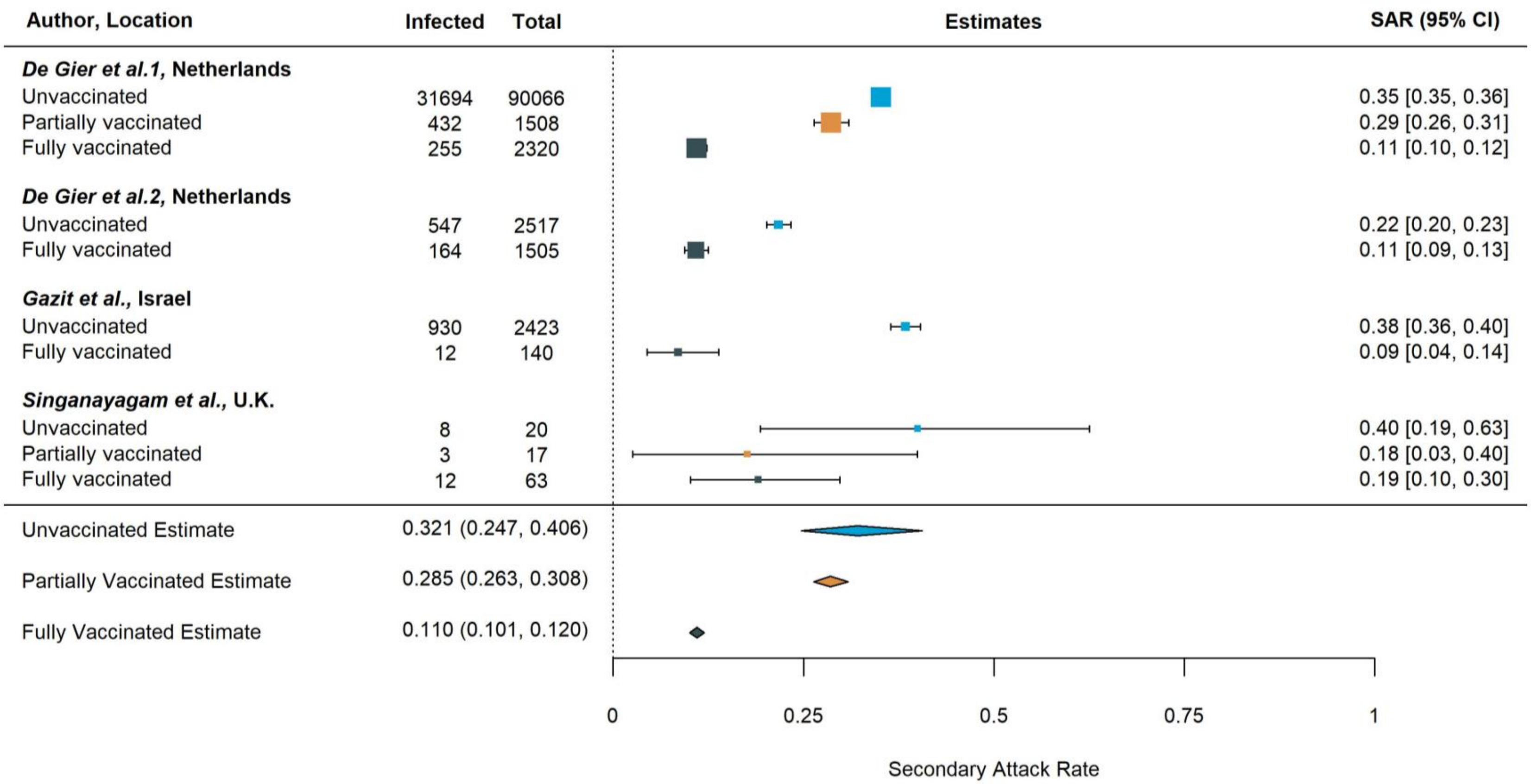
Point sizes are an inverse function of the precision of the estimates, and bars correspond to 95%CIs. Diamonds represent summary SAR estimates with corresponding 95%CIs.

eFigure 9. Funnel Plots of Studies Reporting Household Secondary Attack Rates to Unvaccinated or Fully Vaccinated Contacts From All Index Cases Regardless of Vaccination Status



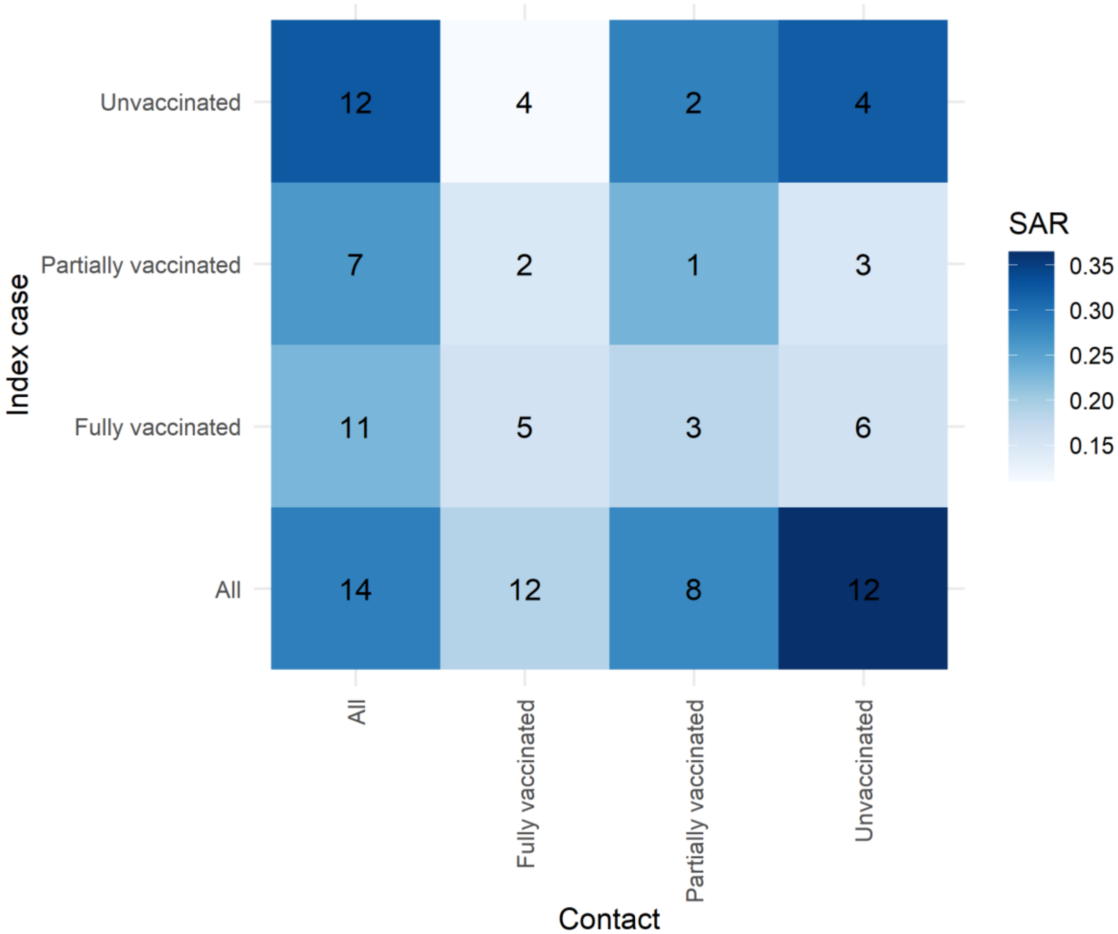
Begg & Mazumdar rank correlation test: unvaccinated (*P*=0.311); fully vaccinated (*P*=0.638)

eFigure 10. Household Secondary Attack Rates by Contact Vaccination Status With Only Unvaccinated Index Cases Included



Point sizes are an inverse function of the precision of the estimates, and bars correspond to 95%CIs. Diamonds represent summary SAR estimates with corresponding 95%CIs.

eFigure 11. Household Secondary Attack Rates by Vaccination Status of the Index Cases and Contacts



The number of studies included in each analysis is shown.

eTable 1. Electronic Databases and Search Strategy for Household Secondary Attack Rate of SARS-CoV-2

Database: PubMed: 1,791 retrieved articles; medRxiv: 306 retrieved		
#1: "SARS-CoV-2" [All Fields] OR "COVID-19" [All Fields] OR "severe acute respiratory syndrome" [All Fields] OR "SARS" [All Fields] OR "SARS-CoV" [All Fields] OR "coronavirus" [All Fields] OR "variant" [All Fields] OR "vaccination" [All Fields] or “immunization” [All Fields]	#2: "secondary attack rate" [All Fields] OR "secondary infection rate" [All Fields] OR "household" [All Fields] OR "family contacts" [All Fields] OR "close contacts" [All Fields] OR "index case" [All Fields] OR "contact transmission" [All Fields] OR "contact attack rate" [All Fields] OR "family transmission" [All Fields]	"2021/06/18"[Date - Publication]: "3000"[Date - Publication]
#1 AND #2 AND #3		

eTable 2. Description of Studies Identified From June 18, 2021 to March 8, 2022

Authors	Location	Study period	No. index cases	Index case symptom status	Duration of follow-up (days)	Test used to diagnose contacts	Universal testing or only symptomatic	Number of tests per contact	Household SAR (infected/total)
Afonso et al.[2]	Goiânia, Brazil	June 15 – October 28, 2020	187	Symptomatic and asymptomatic	14	RT-PCR	Universal	1	Untyped: 25.1% (67/267)
Baker et al.[3]	USA	November 2021 – February 2022	183	Symptomatic and asymptomatic	7	Nucleic acid amplification test or antigen test	Universal	1	Omicron: 52.7% (227/431)
Bistaraki et al.[4]	Greece	October 1 – December 9, 2020	–	Symptomatic and asymptomatic	–	–	–	–	Untyped: 18.3% (10,247/55,991)
Burke et al.[5]	USA	January 14 – April 4, 2020	69	Symptomatic	14	Symptom-based diagnosis	Symptomatic	0	Untyped: 32% (62/193)
Calvani et al.[6]	Rome, Italy	October 16 –December 19, 2020	28	Symptomatic and asymptomatic	–	–	Universal	1	Untyped: 30.6% (22/72)
Cheng et al.[7]	Hong Kong	April – May, 2021	–	Symptomatic and asymptomatic	14 or 21	RT-PCR and whole genome sequencing	Universal	4	Beta: 28.0% (7/25)
Chu et al.[8]	Georgia, USA	July 17 – August 24, 2020	224	Symptomatic and asymptomatic	–	Antigen test	Universal	At least 1	Untyped: 12.2% (46/377)
Clifford et al.[9]	England	February 2, 2021 – September 10, 2021	195	Symptomatic and asymptomatic	14	RT-PCR & genomic sequencing	Universal	3	Alpha: 49% (95% CI: 34-63%) Delta: 81% (95% CI: 57%-96%) Numerator/denominator provided for overall only: 40.6% (113/278)
Cohen et al.[10]	South Africa	July 16, 2020 –	103	Symptomatic and asymptomatic	14	RT-PCR	Universal	Multiple	Alpha: 57.1% (4/7) Beta: 22.1% (81/366) Delta: 32.0% (115/359)

Authors	Location	Study period	No. index cases	Index case symptom status	Duration of follow-up (days)	Test used to diagnose contacts	Universal testing or only symptomatic	Number of tests per contact	Household SAR (infected/total)
		March 31, 2021							Wild type: 10.5% (16/153)
De Gier et al.[11]	Netherlands	February 1 – May 27, 2021	85,210	Symptomatic	14	RT-PCR, loop mediated isothermal amplification or antigen test	Universal	–	Untyped: 30.7% (43,735/142,540)
De Gier et al.[12]	Netherlands	August 9 – September 24, 2021	4,921	Symptomatic	10	RT-PCR, loop mediated isothermal amplification or antigen test	Universal	2	Untyped: 14.9% (1,063/7,130)
Del Águila-Mejía et al.[13]	Cantabria, Spain	December 2021	622	Symptomatic and asymptomatic	9	RT-PCR and whole-genome sequencing	Universal	2	Omicron: 49.3% (263/533) Delta: 48.0% (1129/2350)
Dougherty et al.[14]	Oklahoma, U.S.A.	April 15 – May 3, 2021	21	Symptomatic and asymptomatic	14	Sequencing	Universal	1	Delta: 52.5% (42/80)
Dub et al.[15]	Helsinki, Finland	March 24, 2020 – June 17, 2020	39	Symptomatic and asymptomatic	28	RT-PCR	Universal	4	Untyped: RT-PCR: 32.2% (28/87)
Friedman-Klabanoff et al.[16]	U.S.A.	March – August 2020	–	Symptomatic and asymptomatic	14	RT-PCR	Universal	14	Untyped: 15.2% (86/567)

Authors	Location	Study period	No. index cases	Index case symptom status	Duration of follow-up (days)	Test used to diagnose contacts	Universal testing or only symptomatic	Number of tests per contact	Household SAR (infected/total)
Gazit et al.[17]	Israel	December 20, 2020 – March 17, 2021	2,827	Symptomatic and asymptomatic	10	RT-PCR	Universal	1	Untyped: 34.1% (1,373/4,024)
Ge et al.[18]	Zhejiang Province, China	January 8 – July 30, 2020	370	Symptomatic and asymptomatic	14	RT-PCR	Universal	Multiple	Untyped: 10.1% (260/2,565)
Gorgels et al.[19]	Netherlands	March – April, 2021	97	Symptomatic and asymptomatic	14	RT-PCR or antigen test	Universal	At least 1	Alpha: 39.8% (99/249)
Hwang et al.[20]	Daejeon, South Korea	June 22 – July 31, 2021	23	Symptomatic and asymptomatic	14	RT-PCR	Universal	3	Delta: 64.2% (52/82).
Jagdale et al.[21]	Pune City, India	April 1 – May 15, 2020	119	Symptomatic and asymptomatic	14	RT-PCR	Universal	1	Untyped: 35% (198/565)
Jalali et al.[22]	Norway	December 14, 2021 – January 23, 2022	1122	Symptomatic and asymptomatic	10	RT-PCR or whole genome sequencing	Universal	–	1299 contacts * 0.41 SAR = 662 Omicron: 41.0% (662/1299) 870 contacts * 0.36 SAR = 313 Delta: 36.0% (313/870)
Kang et al.[23]	Guangdong, China	May 21 – June 18, 2021	73	Symptomatic and asymptomatic	14	RT-PCR	Universal	Multiple	Delta: 22.0% (38/173)
Karumanagoundar et al.[24]	Tamil Nadu, India	March 14, 2020 – May 30, 2020	931	Symptomatic and asymptomatic	14	RT-PCR	Universal	1	Untyped: 13.4% (464/3,474)
Layan et al.[25]	Israel	December 31 2020 – April 26 2021	212	Symptomatic and asymptomatic	10	RT-PCR	Universal	2	Untyped: 41% (261/641)
Li et al.[26]	Hubei, China	January 23 – February 25, 2020	476	Symptomatic	14	RT-PCR	Symptomatic	1	Untyped: 10.8% (110/1,020)

Authors	Location	Study period	No. index cases	Index case symptom status	Duration of follow-up (days)	Test used to diagnose contacts	Universal testing or only symptomatic	Number of tests per contact	Household SAR (infected/total)
Liu et al.[27]	Los Angeles, USA	December 2020 – February 2021	15	Symptomatic	14	RT-PCR	Universal	5	Untyped: 34.0% (17/50)
Loss et al.[28]	Germany	October 2020 – June 2021	24	Symptomatic and asymptomatic	12	RT-PCR	Universal	Multiple	Untyped: 53.3% (24/45)
Lyngse et al.[29]	Denmark	June 21, 2021 – October 26, 2021	8,262	Symptomatic and asymptomatic	14	RT-PCR and antigen tests	Universal	At least 1	Delta: 21.7% (11,631/53,584)
Lyngse et al.[30]	Denmark	December 9, 2021 – December 21, 2021	11,939	Symptomatic and asymptomatic	7	RT-PCR and antigen tests	Universal	At least 1	Delta: 21.3% (4,923/23,156) Omicron: 31.2% (1,474/4,718)
Lyngse et al.[31]	Denmark	December 20, 2021 – January 11, 2022	8,541	Symptomatic and asymptomatic	7	RT-PCR and antigen tests	Universal	At least 1	Omicron: 31.8% (5,702/17,945)
Ma et al.[32]	Guangzhou, China	May 21, 2021, – June 18, 2021	69	Symptomatic and asymptomatic	14	RT-PCR	Universal	1	Delta: 9.3% (15/162)
Martinez et al.[33]	Baltimore, USA	June 11, 2020 – May 20, 2021	277	Symptomatic	14	RT-PCR	Universal	1	Untyped: 45.8% (292/638)
Martínez-Baz et al.[34]	Navarre, Spain	April – August 2021	–	Symptomatic and asymptomatic	10	RT-PCR	Universal	2	Untyped: 28.5% (4,639/16,305)
Meena et al.[35]	Madurai, Tamil Nadu, India	March – May, 2020	139	Symptomatic and asymptomatic	>7 days	RT-PCR	Universal	1	Untyped: 8.1% (42/521)

Authors	Location	Study period	No. index cases	Index case symptom status	Duration of follow-up (days)	Test used to diagnose contacts	Universal testing or only symptomatic	Number of tests per contact	Household SAR (infected/total)
Meyer et al.[36]	Germany	December 31, 2020 – April 26, 2021	14	Symptomatic and asymptomatic	14	RT-PCR	Universal	2	Untyped: 45.2% (14/31)
Miller et al.[37]	England	March 30, 2020 – November 17, 2020	181	Symptomatic	14	RT-PCR	Universal	2	Untyped: 21.1% (91/431) (PCR only)
Ministry of Health NZ[38]	New Zealand	August, 2021	–	–	–	–	–	–	Delta: 45.6% (902/1976)
Montecucco et al.[39]	Genoa, Italy	October 1, 2020 – March 31, 2021	6	Symptomatic and asymptomatic	–	RT-PCR	Universal	1	Untyped: 33.3% (17/51)
Musa et al.[40]	Bosnia and Herzegovina	August 3 – December 23, 2020	360	Symptomatic	14	RT-PCR or symptom-based diagnosis	–	–	Untyped: 15.9% (119/747)
Ng et al.[41]	Singapore	September 1, 2020 and May 31, 2021	301	Symptomatic	14	RT-PCR & whole-genome sequencing	Universal	2	Delta: 22.4% (169/753) Other: 13.3% (33/248)
Ng et al.[42]	Negeri Sembilan, Malaysia	February 1, 2020 – December 31, 2020	185	Symptomatic and asymptomatic	14	RT-PCR	Universal	At least 1	Untyped: 55.0% (466/848)
Ogata et al.[43]	Tsuchiura, Japan	August 2020 – February 2021	236	Symptomatic and asymptomatic	–	RT-PCR	Universal	At least 1	Untyped: 25.2% (125/496)

Authors	Location	Study period	No. index cases	Index case symptom status	Duration of follow-up (days)	Test used to diagnose contacts	Universal testing or only symptomatic	Number of tests per contact	Household SAR (infected/total)
Rajmohan et al.[44]	Thrissur, India	January 1, 2021 – February 28, 2021	101	Symptomatic and asymptomatic	14	RT-PCR or Rapid Antigen Test	Universal	1	Untyped: 40.7% (185/387)
Ratovoson et al.[45]	Madagascar	March 19 – July 30, 2020	33	Symptomatic and asymptomatic	21	RT-PCR	Universal	4	Untyped: 38.8% (56/179)
Remón-Berrade et al.[46]	Navarre, Spain	March 2 – May 26, 2020	89	Symptomatic	–	RT-PCR or Antigen Test	Universal	1	Untyped: 14.1% (46/326)
Sachdev et al.[47]	San Francisco, USA	January 29 – July 2, 2021	105	Symptomatic and asymptomatic	14	RT-PCR, loop-mediated amplification, or antigen Test	Universal	–	Overall: 28.2% (20/71) Delta: 33.3% (5/16) Alpha: 25.0% (2/8) Gamma: 0% (0/3) Beta: 20.0% (1/5) Iota: 55.6% (5/9) Kappa: 0% (0/2)
Singanayagam et al.[48]	U.K.	Sept 13, 2020 – Sept 15, 2021	138	Symptomatic	14-20	RT-PCR & whole-genome sequencing	Universal	Daily	Delta: 25.9% (53/205)
Smith-Jeffcoat et al.[49]	New York City, USA	November 18 – December 20, 2021	16	Symptomatic	14	RT-PCR and antigen tests	Universal	1	Omicron: 33.3% (6/18)
Song et al.[50]	South Korea	November – December 2021	25	Symptomatic and asymptomatic	14	–	Universal	–	Omicron: 50% (18/36)
Sorioano-Arandes et al.[51]	Catalonia, Spain	July 1, 2020 – October 31, 2020	80	Symptomatic and asymptomatic	–	RT-PCR or antigen testing	Universal	–	Untyped: 64.8% (560/864)

Authors	Location	Study period	No. index cases	Index case symptom status	Duration of follow-up (days)	Test used to diagnose contacts	Universal testing or only symptomatic	Number of tests per contact	Household SAR (infected/total)
Tanaka et al.[52]	Osaka Prefecture, Japan	December 1–20, 2020 & April 20, 2021 – May 3, 2021	307	Symptomatic	14	RT-PCR	Universal	At least 1	Pre-existing virus: 19.3% (56/290) Alpha: 38.7% (48/124)
ur Rehman et al.[53]	Islamabad, Pakistan	March 21 – April 4, 2020	–	Symptomatic	14	RT-PCR	Universal	1	Untyped: 36.8% (14/38)
Watanapokasin et al.[54]	Bangkok, Thailand	May 1 – June 30, 2021	30	Symptomatic	14	RT-PCR	Universal	–	Alpha: 48.6% (17/35) Delta: 34.9% (15/43).
Yi et al.[55]	Jeju, South Korea	August 3 – August 10, 2021	25	Symptomatic and asymptomatic	14	RT-PCR	Universal	1	Delta: 23.9% (11/46)

eTable 3. References for Studies Included in Figure 1 of SAR Over Time

Studies	% (95% CI)	Number of studies	References
All	22.9% (20.3%-25.8%)	135	1-135
- New studies identified (between June 18, 2021 and March 8, 2022)		58	1-58
- Studies from previous review[136] (through June 17, 2021)[a]		77	59-135
Midpoints in 2021 or 2022	37.3% (32.7%-42.1%)	33	1,3,7,9-14,17,19,20,22,23,25,27-31,34,36,38,41,44,47,48,50,52,54,55,57,98
Midpoints through April 2020	15.5% (13.2%-18.2%)	63	5,18,21,24,26,35,53,63-68,70-72,74,76-79,82-86,89-91,93-97,99,100,102-107,109,110,112,114,115,117,119,121,123,125-135
Midpoints from January 2020 to June 2020	16.7% (14.3%-19.3%)	80	5,15,16,18,21,24,26,35,45,46,53,59-61,63-72,74,76-79,81-97,99-107,109,110,112-117,119,121-123,125-135
Midpoints from July 2020 to December 2020	32.2% (25.4%-39.8%)	21	2,4,6,8,27,33,39,40,42,43,51,56,58,62,80,108,111,118,120,124
Midpoints from January 2021 to June 2021	35.3% (29.9%-41.1%)	23	1,7,9-11,14,17,19,23,25,27,28,32,34,36,41,44,47,48,52,54,57,98
Midpoints > June 2021	40.6% (33.1%-48.6%)	12	3,12,13,20,22,29-31,38,49,50,55

[a]5 studies[137-141] were excluded that did not include laboratory-confirmed infections and 1[142] that included only asymptomatic index cases

eTable 4. Risk of Bias Assessment for Studies Included in Review of Household Transmissibility of SARS-CoV-2 Using the Same Modified Version of the Newcastle–Ottawa Quality Assessment Scale for Observational Studies Used by Fung et al[143]

	Selection			Comparability	Outcome				
Author	Representativeness of the index cases in region (2 points)[a]	Index case definition (1 point)[b]	Sample size (1 point)[c]	Household SAR disaggregated by index or contact covariates (1 point)[d]	Universal or symptom-based testing (1 point)[e]	Follow-up duration (2 points)[f]	Number of tests per contact (1 point)[g]	Total points	Risk of bias[h]
Baker et al.[3]	+	+	+	+	+	++	0	7	Low
Cheng et al.[7]	+	+	0	+	+	++	+	7	Low
Cohen et al.[10]	++	+	+	+	+	++	+	9	Low
De Gier et al.[11]	++	+	+	+	+	++	0	8	Low
De Gier et al.[12]	++	+	+	+	+	++	+	9	Low
Del Águila-Mejía et al.[13]	+	+	+	+	+	+	+	7	Low
Dougherty et al.[14]	+	+	0	0	+	++	0	5	Moderate
Gazit et al.[17]	++	+	+	+	+	+	0	7	Low
Gorgels et al.[19]	+	+	0	+	+	++	+	7	Low
Harris et al.[1]	++	+	+	+	+	++	+	9	Low
Hwang et al.[20]	++	+	0	0	+	++	+	7	Low
Jalali et al.[22]	++	+	+	+	+	+	+	8	Low
Kang et al.[23]	++	+	0	0	+	++	+	7	Low
Layan et al.[25]	+	+	+	+	+	+	+	7	Low
Loenenbach et al.[98]	+	+	0	+	0	++	0	5	Moderate
Lyngse et al.[29]	++	+	+	+	+	++	0	8	Low
Lyngse et al.[30]	++	+	+	+	+	+	0	7	Low
Lyngse et al.[31]	++	+	+	+	+	+	0	7	Low
Lyngse et al.[57]	++	+	+	+	+	++	0	8	Low
Ma et al.[32]	+	+	0	0	+	++	0	5	Moderate
Martínez-Baz et al.[34]	++	+	+	+	+	+	+	8	Low
Meyer et al.[36]	0	+	0	+	+	++	+	6	Moderate
Ministry of Health NZ[38]	++	0	+	0	0	0	0	3	High
Ng et al.[41]	++	+	+	+	+	++	+	9	Low
Sachdev et al.[47]	+	+	0	+	+	++	0	6	Moderate
Singanayagam et al.[48]	+	+	0	+	+	++	+	7	Low
Smith-Jeffcoat et al.[49]	0	+	0	+	+	++	0	5	Moderate

Song et al.[50]	0	+	0	+	+	+	+	5	Moderate
Tanaka et al.[52]	++	+	0	+	+	++	+	8	Low
Watanapokasin et al.[54]	0	+	0	+	+	++	0	5	Moderate
Yi et al.[55]	0	+	0	+	+	++	0	5	Moderate

[a] ++: Representative of COVID-19 cases in region; +: Somewhat representative; 0: Poorly described or not representative of cases in region
[b] +: Index case identified by date of onset of symptoms and/or test dates; 0: First case not clearly defined
[c] +: ≥300 contacts; 0: <300 contacts
[d] +: Secondary attack rate disaggregated by ≥1 covariate; 0: Secondary attack rate not disaggregated by any covariates
[e] +: Tested all contacts (both symptomatic and asymptomatic); 0: Only tested symptomatic contacts
[f] ++: ≥14 days; +: 7 days; 0: <7 days or not specified
[g] +: ≥2 tests; 0: 1 test or not described
[h] High: ≤3 points; moderate: 4–6 points; low: ≥7 points

SARs for Omicron (42.7%; 95%CI, 34.3%-51.5%) (5 studies[3,13,22,30,31]), Alpha (35.8%; 95%CI, 32.9%-38.9%) (7 studies[10,11,17,19,25,52,57]), Delta (29.1%; 95%CI, 21.7%-37.8%) (10 studies[10,12,13,20,22,23,29,30,41,48]), and Beta (22.5%; 95%CI, 18.6%-26.9%) (2 studies[7,10]) did not significantly change from those reported in Figure 2 when restricting to studies with low risk of bias.

eTable 5. Pairwise Analyses of Index Case Vaccination Status Using Only Studies in Which SARs Were Reported From Both Relevant Subgroups

Variant	Subgroup estimates: % (95%CI)	Number of study pairs	References
To all contacts regardless of vaccination status			
All	Fully vaccinated: 22.8% (15.3%-32.7%) Unvaccinated: 35.5% (27.3%-44.6%)	11	3,11-13,17,22,25,29,36,41,48
All	Partially vaccinated: 26.2% (11.5%-49.2%) Unvaccinated: 28.0% (17.3%-42.0%)	7	1,3,11,12,22,41,48
All	Fully vaccinated: 24.9% (14.6%-39.2%) Partially vaccinated: 31.7% (15.0%-55.0%)	6	3,11,12,22,41,48
Alpha	Fully vaccinated: 10.7% (9.0%-12.8%) Unvaccinated: 36.3% (31.3%-41.6%)	4	11,17,25,36
Delta	Fully vaccinated: 24.8% (17.2%-34.3%) Unvaccinated: 28.3% (19.9%-38.6%)	6	12,13,22,29,41,48
Delta	Partially vaccinated: 22.5% (11.2%-40.1%) Unvaccinated: 24.6% (18.1%-32.6%)	4	12,22,41,48
Delta	Fully vaccinated: 21.9% (14.4%-32.0%) Partially vaccinated: 22.5% (11.2%-40.1%)	4	12,22,41,48
Omicron	Booster vaccinated: 38.0% (29.9%-46.8%) Unvaccinated: 52.5% (40.2%-64.5%)	3	3,22,31
Omicron	Fully vaccinated: 50.8% (47.9%-53.8%) Unvaccinated: 55.5% (48.4%-62.3%)	3	3,13,22
Omicron	Partially vaccinated: 76.8% (7.7%-99.2%) Unvaccinated: 58.6% (53.9%-63.1%)	2	3,22
Omicron	Booster vaccinated: 38.0% (29.9%-46.8%) Fully vaccinated: 50.8% (47.9%-53.8%)	3	3,22,31
Omicron	Booster vaccinated: 44.1% (37.6%-50.9%) Partially vaccinated: 76.8% (7.7%-99.2%)	2	3,22
Omicron	Fully vaccinated: 51.0% (47.8%-54.3%) Partially vaccinated: 76.8% (7.7%-99.2%)	2	3,22
To unvaccinated contacts only			
All	Fully vaccinated: 12.0% (10.0%-14.2%) Unvaccinated: 30.9% (23.9%-38.8%)	4	11,12,17,48
All	Partially vaccinated: 14.8% (6.7%-29.4%) Unvaccinated: 19.5% (11.1%-31.8%)	3	1,11,12

All	Fully vaccinated: 11.7% (9.8%-13.9%) Partially vaccinated: 23.9% (16.7%-32.9%)	2	[11,12]

eTable 6. Pairwise Analyses of Household Contact Vaccination Status Using Only Studies in Which SARs Were Reported From Both Relevant Subgroups

Variant	Subgroup estimates: % (95%CI)	Number of study pairs	References
From all index cases regardless of vaccination status			
All	Fully vaccinated: 18.8% (12.6%-27.1%) Unvaccinated: 36.5% (30.5%-43.0%)	12	3,11,12,17,22,25,29,34,41,47,48,55
All	Partially vaccinated: 27.8% (20.0%-37.1%) Unvaccinated: 39.6% (32.3%-47.4%)	8	3,12,22,34,41,47,48,55
All	Fully vaccinated: 23.9% (14.7%-36.4%) Partially vaccinated: 27.8% (20.0%-37.1%)	8	3,12,22,34,41,47,48,55
Alpha	Fully vaccinated: 10.5% (7.9%-13.8%) Unvaccinated: 38.4% (34.4%-42.5%)	3	11,17,25
Delta	Booster vaccinated: 11.3% (9.8%-13.0%) Unvaccinated: 36.1% (24.2%-50.0%)	2	22,30
Delta	Fully vaccinated: 17.1% (11.6%-24.6%) Unvaccinated: 30.1% (23.2%-38.1%)	6	12,22,29,41,48,55
Delta	Partially vaccinated: 23.6% (17.2%-31.6%) Unvaccinated: 34.7% (25.5%-45.1%)	4	22,41,48,55
Delta	Fully vaccinated: 21.0% (12.8%-32.5%) Partially vaccinated: 23.6% (17.2%-31.6%)	4	22,41,48,55
Omicron	Booster vaccinated: 32.7% (24.5%-42.2%) Unvaccinated: 43.9% (32.2%-56.2%)	4	3,22,30,31
Omicron	Fully vaccinated: 51.2% (47.8%-54.7%) Unvaccinated: 57.4% (52.8%-61.9%)	2	3,22
Omicron	Partially vaccinated: 56.6% (48.2%-64.7%) Unvaccinated: 57.4% (52.8%-61.9%)	2	3,22
Omicron	Booster vaccinated: 41.7% (34.9%-48.9%) Fully vaccinated: 51.2% (47.8%-54.7%)	2	3,22
Omicron	Booster vaccinated: 41.7% (34.9%-48.9%) Partially vaccinated: 56.6% (48.2%-64.7%)	2	3,22
Omicron	Fully vaccinated: 51.2% (47.8%-54.7%) Partially vaccinated: 56.6% (48.2%-64.7%)	2	3,22
From unvaccinated index cases only			
All	Fully vaccinated: 11.0% (10.1%-12.0%) Unvaccinated: 32.% (24.7%-40.6%)	4	11,12,17,48

All	Partially vaccinated: 28.5% (26.3%-30.8%) Unvaccinated: 35.2% (34.9%-35.5%)	2	[11,48]
All	Fully vaccinated: 11.2% (10.0%-12.5%) Partially vaccinated: 28.5% (26.3%-30.8%)	2	[11,48]

eTable 7. Household Secondary Attack Rates by Vaccine Type and Contact Vaccination Status With All Index Cases Included Regardless of Vaccination Status

Vaccine	SAR (95% CI)	Number of studies	References
Full vaccination			
Ad26.COV2.S	34.2% (14.4%-61.5%)	4	[12,29,34,47]
BNT162b2	15.2% (14.6%-16.0%)	4	[12,29,34,47]
ChAdOx1-S	13.6% (7.4%-23.7%)	3	[12,29,34]
mRNA-1273	9.5% (8.6%-10.6%)	4	[12,29,34,47]
Partial vaccination			
BNT162b2	30.5% (18.5%-45.9%)	2	[12,34]
ChAdOx1-S	29.5% (24.0%-35.7%)	2	[12,34]
mRNA-1273	17.5% (13.7%-22.3%)	2	[12,34]
Unvaccinated	35.4% (29.0%-42.5%)	4	[12,29,34,47]

eTable 8. Vaccination Status Definitions for Studies That Reported Household Secondary Attack Rates by Vaccination Status of Index Cases or Contacts

Study	Vaccination definitions
Baker et al.[3]	Received a booster dose was defined as having received an additional dose after completion of the primary COVID-19 vaccination series before the index date. Fully vaccinated was defined as completion of the primary vaccination series ≥2 weeks before the index date and stratified into completion <5 months or ≥5 months before the index date. Some persons who were fully vaccinated had unknown dates for completion of their primary vaccination series. Partially vaccinated was defined as having only 1 dose of a 2-dose series or completing the primary vaccination series <2 weeks before the index date.
De Gier et al.[11]	Partly vaccinated was defined as having received the first dose of a two-dose schedule at least 14 days before onset of symptoms. Fully vaccinated was defined as having completed a two-dose schedule at least 7 days or the one-dose Janssen schedule at least 14 days before symptom onset.
De Gier et al.[12]	Full vaccination defined as 14 or more days after the second-dose of Comirnaty (BNT162b2 mRNA; BioNTech-Pfizer, Mainz, Germany/New York, United States), Spikevax (mRNA-1273, Moderna, Cambridge, United States) or Vaxzevria (ChAdOx1 nCoV-19; Oxford-AstraZeneca, Cambridge, United Kingdom) or 28 or more days after one-dose of Janssen COVID-19 vaccine (Ad26.COV2-S, Janssen-Cilag International NV, Beerse, Belgium).
Del Águila-Mejía et al.[13]	Vaccination status was dichotomized to either non vaccinated or fully vaccinated as per each vaccine's protocol.
Harris et al.[1]	Vaccinated index cases defined as having been vaccinated 21 days or more prior to testing positive for COVID-19 based on evidence of the time needed for the vaccine to provide a sufficient level of immunity. Non-vaccinated index cases were defined as not having received a vaccine prior to testing positive. Households where the index case received the vaccine less than 21 days before testing positive were excluded from this analysis. Most of the vaccinated index patients (93%) had received only the first dose of vaccine.
Gazit et al.[17]	Participants were classified into one of three vaccination-status groups at the time of the index case (the confirmed exposure): Unvaccinated; Recently Vaccinated Once, i.e. those vaccinated with the first vaccine dose within 0-7 days before the index infection, and Fully Vaccinated, i.e. those who were 7 or more days post the second dose by the time of the confirmed exposure.
Jalali et al.[22]	To define the vaccine status of the household contacts, they used the test date of the primary case and compared it with the contacts vaccination dates: 1.Unvaccinated: A contact was considered unvaccinated if the primary case's test date is before the contact's first dose. 2.Partially vaccinated: A contact was considered partially vaccinated if he/she had received 1 dose of vaccine (mRNA Vaccines or AstraZeneca vaccine) prior to the test date of his/her primary case. Contacts who had received dose 2 within the last week before the primary case's test date were also considered partly vaccinated. 3.Fully vaccinated: A contact was considered fully vaccinated if he/she had received dose 2 (mRNA) at least 1 week prior to the test date of his/her primary case. 4.Booster vaccinated: A contact was considered booster vaccinated if he/she had received dose 3 at least 1 week prior to the test date of his/her primary case. The time interval between the second and the third doses should be >= 120 days. The vaccine status of the primary cases was defined based on their test date and their vaccination dates. Individuals with J&J vaccine were excluded from the study. We excluded households where two individuals tested positive on the same day to ensure a unique index case in each household.

Layan et al.[25]	Cases were considered vaccinated if their infection occurred >7 days after the 2nd dose. Similarly, household contacts were considered vaccinated if their exposure to the index case occurred >7 days after the 2nd dose
Lyngse et al.[29]	Individuals who had not received a first dose were classified as not vaccinated. The definitions of full vaccinations were: Comirnaty (Pfizer/BioNTech): 7 days after second dose; Vaxzevria (AstraZeneca): 15 days after second dose; Spikevax (Moderna): 14 days after second dose; COVID-19 vaccine Janssen (Johnson & Johnson): 14 days after vaccination. If an individual was cross vaccinated (mainly first dose of Vaxzevria and second dose of Comirnaty), the definition of the second dose vaccination was used. Individuals that were in the period between the first dose and fully vaccinated were defined as partially vaccinated and excluded. Any individual that had received a booster vaccination was also excluded. Lastly, all households with a previous infection (positive RT-PCR test) were excluded.
Lyngse et al.[30]	Individuals were classified by vaccination status into three groups: i) unvaccinated; ii) fully vaccinated (defined by the vaccine used, Comirnaty (Pfizer/BioNTech): 7 days after second dose; Vaxzevria (AstraZeneca): 15 days after second dose; Spikevax (Moderna): 14 days after second dose; Janssen (Johnson & Johnson): 14 days after vaccination, and 14 days after the second dose for cross vaccinated individuals) or 14 days after previous infection; or iii) booster-vaccinated (defined by 7 days after the booster vaccination. Partially vaccinated individuals were regarded as unvaccinated in this study.
Lyngse et al.[31]	The vaccination status of all individuals was classified into three groups: i) unvaccinated (including partially vaccinated individuals); ii) fully vac92 cinated (defined by the vaccine used, Comirnaty (Pfizer/BioNTech): 7 days after second dose; Vaxzevria (AstraZeneca): 15 days after second dose; Spikevax (Moderna): 14 days after second dose; Janssen (Johnson & Johnson): 14 days after vaccination, and 14 days after the second dose for cross vaccinated individuals) or 14 days after previous infection; or iii) booster-vaccinated, defined by 7 days after the booster vaccination.
Martínez-Baz et al.[34]	A person was considered fully vaccinated ≥ 14 days after receiving one dose of Janssen or the second dose of other vaccines, and partially vaccinated ≥ 14 days after receiving only the first dose of Spikevax, Comirnaty or Vaxzevria.
Meyer et al.[36]	Not defined, but the two secondary cases found among household contacts of vaccinated index cases were diagnosed 25 days after the second vaccination.
Ng et al.[41]	Both index cases and close contacts were considered partially vaccinated if they had received one vaccine dose before the day the quarantine order was issued, or were within 14 days of the second dose on the day the quarantine order was issued. If more than 14 days had elapsed after their second dose, they were taken to be fully vaccinated.
Sachdev et al.[47]	Partially vaccinated patients were defined as patients who received at least 1 dose of vaccine but were not fully vaccinated. Fully vaccinated patients were defined as patients who had received a second mRNA vaccine dose or a single-dose viral vector vaccine ≥14 days from symptom onset or collection of a positive specimen
Singanayagam et al.[48]	Participant defined as unvaccinated if they had not received a single dose of a COVID-19 vaccine at least 7 days before enrolment, partially vaccinated if they had received one vaccine dose at least 7 days before study enrolment, and fully vaccinated if they had received two doses of a COVID-19 vaccine at least 7 days before study enrolment.

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